



Attorney Docket No. 10021154-1 (2116-14-3)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Douglas Gene Keithley

Title: DEVICE AND METHOD FOR DIGITIZING A SERIALIZED
SCANNER OUTPUT SIGNAL

Serial Number: 10/630,506

Filing Date: July 29, 2003

Examiner/Unit: Mark Stephen Tremblay/2876

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CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited in the United States Postal Service as First Class Mail in an envelope addressed to: MS AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 30th day of September, 2004.


Signature

DECLARATION OF PRIOR INVENTION IN THE UNITED STATES PURSUANT TO 37 C.F.R. § 1.131 TO OVERCOME A CITED U.S. PATENT APPLICATION PUBLICATION

TO THE COMMISSIONER FOR PATENTS:

This Declaration establishes completion of the invention in the United States on a date before October 16, 2002, which is the filing date of U.S. Patent Application Publication US 2004/0075748 A1.

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I, Douglas G. Keithley, hereby declare the following:

1) I am the sole inventor of the invention described and claimed in U.S. Patent Application Serial No. 10/630,506, which was filed on July 29, 2003. Before October 16, 2002, I had conceived of and reduced to practice an image-capture circuit and a scanner in the United States. Specifically, I had conceived of and reduced to practice an image-capture circuit that had the features of claim 1 as originally filed. This image-capture circuit, which I had conceived of and reduced to practice before October 16, 2002, included a digitizer operable to receive a serial analog color signal having a predetermined sequence of color components, the digitizer having a plurality of channels each operable to process a respective color component, an analog-to-digital converter operable to sequentially receive and digitize the color components, and a controller coupled to the digitizer and operable to couple each of the channels to the analog-to-digital converter in the predetermined sequence. Before October 16, 2002, I also had conceived of and reduced to practice an image-capture circuit that had the features of claim 10 as originally filed. This image-capture circuit included a digitizer operable to receive a serial analog color signal having a predetermined sequence of color components, the digitizer having a plurality of signal modification channels, one of the channels operable to sequentially modify each of the color components according to a corresponding modification parameter, an analog-to-digital converter operable to sequentially receive and digitize the modified color components, and a controller coupled to the digitizer and operable to sequentially update the modification parameter to correspond to the color component that the channel is modifying. Likewise, I had conceived of and reduced to practice before October 16, 2002 scanners as respectively recited in claims 13 and 18 as originally filed, methods for digitizing as respectively recited in claims 19 and 20 as originally filed, an image-capture circuit as recited in claim 21 as filed on the same day as this Declaration, a scanner as recited in claim 22 as filed on the same day as this Declaration, and a method for digitizing as recited in claim 23 as filed on the same day as this Declaration.

2) "Reduction to practice" as used herein means designing the image-capture circuits and scanners, programming the components and interconnections of the image-capture circuits and scanners into a computer, and performing the necessary

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computer simulation on the image-capture circuits and scanners to ensure the desired operations.

3) Exhibits 1-2 are copies of pages of an invention disclosure that I submitted to my superiors before October 16, 2002 according to standard corporate procedures. Exhibit 1 includes a schematic diagram of an embodiment of the invention that corresponds to the embodiment shown in FIG. 4 of the patent application. Specifically, like FIG. 4, the schematic diagram of Exhibit 1 shows an output signal from a contact image sensor (CIS) coupled to the inputs of the red, green, and blue color-processing channels of an image-capture circuit. The text in Exhibit 1 adjacent to the schematic diagram describes how one can control the multiplexer to allow the red channel to process the red component of the CIS output signal, the green channel to process the green component of the CIS output signal, and the blue channel to process the blue component of the CIS output signal. Exhibit 2 describes an alternative embodiment of the invention where one of the color-processing channels is used to process all of the components (red, green, and blue) of the CIS output signal.

4) Exhibit 3 is a copy of a page of my invention disclosure, which is described in paragraph (3), and includes the signature of my colleague Mr. Gary Zimmerman, who witnessed my invention disclosure before October 16, 2002.

5) Exhibit 1 shows or implies each and every element of claim 1 as originally filed. The schematic diagram in Exhibit 1 shows an image-capture circuit comprising a digitizer (square block) operable to receive a serial analog color signal (the signal output from the CIS) having a predetermined sequence of color components, and shows the digitizer having a plurality of channels (the three buffered lines) each operable to process a respective color component and having an analog-to-digital converter (ADC) operable to sequentially receive and digitize the color components. And although the schematic diagram does not show a controller, I intended at the time that I prepared Exhibit 1, and it is inherent from Exhibit 1, that the image-capture circuit includes a controller to control the MUX, which in this embodiment is the component that the controller uses to couple the channels to the analog-to-digital converter in the predetermined sequence.

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6) Exhibits 1-2 show or imply each and every element of claim 10 as originally filed. The schematic diagram in Exhibit 1 shows the image-capture circuit, digitizer, channels, and analog-to-digital converter, and implies the controller, as discussed in paragraph (5). Exhibit 2 describes how one of the channels can operate to sequentially modify each of the color components according to a corresponding modification parameter.

7) In a manner similar to that discussed in paragraphs (5)-(6), Exhibits 1-2 show or imply each and every element of claims 13 and 18-20 as originally filed and of claims 21-23 as filed on the same day as this Declaration.

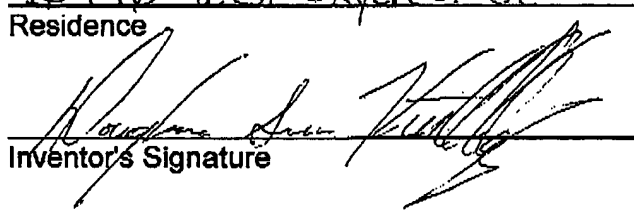
8) Per MPEP § 715.09, we are seasonably submitting this Declaration before receiving a final rejection of the patent application.

9) I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Douglas Gene Keithley
Full Name of Inventor

United States of America
Citizenship

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Inventor's Signature

9/30/2004
Date

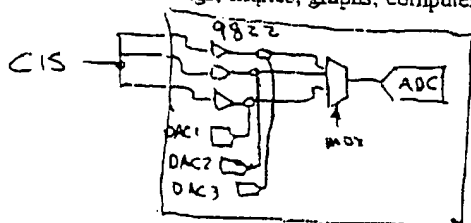
B. Problems solved by the invention.

The 9822 has 3 analog inputs, ^{each} with its own analog gain and offset setting. for Color CCD's this means that each color channel can be calibrated separately. For a single output color CIS, only one channel is used for all 3 colors, so a tradeoff needs to be made when selecting the analog gain and offset. The described solution removes this constraint.

C. Advantages of the invention over what has been done before.

Separate analog gain & offset for each channel means better S/N and higher yield for the CIS /electronics combinations.

D. Description of the construction and operation of the invention (include appropriate schematic, block, & timing diagrams; drawings; samples, graphs; computer listings; test results; etc.)



connect the single CIS output to the three analog inputs on the 9822. Program the 9822 to support single channel CIS. Instead of setting the mux for a single channel,

Dynamically program the mux at the end/beginning of each scan line with a different input: select Red for the first scan line, Green input from the 2nd line, Blue from the 3rd line, etc. The mux is extremely fast since it is designed to automatically switch for each pixel (not a line) when in CCD color mode.

must be done with minimal latency + hardware.

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Patent Application Questionnaire

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Invention Title: Automatic AFE muxing to support CIS

Project Name: _____

Inventor(s) first name	Last name	Approval (Initial)

* List other inventors on the back of this sheet.

Contact person: _____ Phone: _____

1. Is the invention a method or process? _____ (yes / no)
Is the invention a structure or apparatus? _____ (yes / no)
2. Are there alternative methods of implementing the invention? _____ (yes / no). If yes, please describe.

The single input could be used and the offset & gain could be reprogrammed every line, but there is no spec for time to settle ~~between~~ after reprogrammed since the normal intention would be to only update the values at calibration.

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Agilent Technologies

INVENTION DISCLOSURE COMPANY CONFIDENTIAL PAGE 2 OF 4

Signature of Witness(es): (Please try to obtain the signature of the person(s) to whom invention was first disclosed.)

The invention was first explained to, and understood by, me (us) on this date: _____

Full Name

Signature

Date of Signature

Full Name

Signature

Date of Signature

Inventor & Home Address Information: (If more than four inventors, include addl. information on a copy of this form & attach to this document)

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